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21 June 1971

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MEMORANDUM FOR: Chief, Research & Engineering Division, TSG/NPIC

ATTENTION [redacted] 25X1

SUBJECT : Answers to Questions Concerning Stellar/Terrain Ephemeris and Data Blocks

1. At this time, it is impossible to obtain an official reply from SAMSO (not OSP) regarding the questions that you have asked me to answer. You must be aware that SAMSO is on a 24-hour schedule and will not be able to reply for several weeks. I have, however, varified the answers to your questions from documentation on file and have also conferred [redacted] 25X1

2. Information regarding data block reader in Stellar/Terrain (S/T) system:

a. Question: What information is contained in the S/T data block that is not in the S/T ephemeris?

Answer: Stellar data block

(1) Camera time of port stellar shutter ½ open.
(2) Camera time of port stellar shutter ½ closed.
(3) Camera time of terrain mid-exposure to 0.1 millisecond accuracy.
(4) Terrain exposure input command.
(5) Overlap command
(6) Index bit

Terrain data block

(1) Camera time of starboard stellar shutter ½ closed.
(2) Camera time of starboard stellar shutter ½ closed.
(3) Camera time of terrain mid-exposure to 0.1 millisecond accuracy.
(4) Terrain exposure command
(5) Overlap command
(6) Index bit

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b. Question: What information is contained in the total S/T ephemeris?
Answer:

1. Nadir Lat and Long
2. Time at center of format to one millisecond
3. Rev Number
4. Frame number
5. Camera ID
6. Date
7. Solar elevation
8. Altitude
9. Inertial Velocity
10. Ground Track Azimuth
11. IMC rate
12. Time Correlation Parameters
13. Focal length
14. Right ascension and declination of each stellar optical axis.
15. A 20-point ephemeris (XYZ, XD YD ZD, XDD YDD ZDD)
16. Lat and Long of four corners of each terrain camera operation
17. Filter
18. Film
19. DMU firings and special events

c. Question: Is the SPARS (automatic attitude) system a permanent modification from #13 on-or experimental?
Answer: It has been recommended by MC&G that there be a SPARS system on [redacted] for test purposes, and that SPARS be on all missions [redacted] 25X1 25X1

d. Question: Will automatic attitude information (SPARS) be in the S/T ephemeris or only in the S/T data block.
Answer: Only in the data blocks; one-half on the stellars and one-half on the terrain.

e. Question: Can we get the layout of row #6 (SPARS automatic attitude column) of the S/T data blocks?
Answer: No, because it has not been designed as of this writing.

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[redacted]

Chief, Reconnaissance Systems Branch,
RED/TSG/NPIC

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